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EX PARTE

November 21, 1997

Ms. Magalie Roman Salas
Secretary
Federal Communications Commission
1919 M Street, N.W. Room 222
Washington, D.C. 20554

RE: CC Docket Nos. 96-45 and 97-160

Dear Ms. Salas,

Today, Sprint representatives met with Martha Hogarty, Barbera Meisenheimer, and Hung Hu of the Missouri Public Service Commission to discuss the attached materials regarding enhancements to the Benchmark Cost Proxy Model. Representing Sprint were Jim Sichter, Richard Lawson, and John Banks.

Sprint requests that this information be made a part of the record in this matter. In accordance with Commission Rule 1.1206(a)(1), the original and three copies of this notice are being filed with your office. Please call if there are any questions.

Sincerely,

Pete Sywenki

Attachment

BCPM2.5

BCPM, Version 2.5

Enhancements to the

Benchmark Cost Proxy Model

Jefferson City, Missouri
November 21, 1997

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BCPM2.5

What the BCPM Does!

- It does estimate the costs that would be incurred by an efficient local provider serving the entire market.
- It does assume state-of-the-art technology, in certain cases more advanced that what currently is used.
- It does work! The network constructed by the model functions and builds sufficient plant to reach all customers.
- The model meets the FCC criteria, mandates and guidelines for proxy models.

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What the BCPM Doesn't Do!

- It does not reproduce the costs incurred by any existing provider.
- It does not replicate the network layout as it exists today.
- It does not (necessarily) use the same materials used in the network today.

- In its preliminary form it does not estimate the costs of unbundled network elements. (Model has been used to produce loop costs; soon to incorporate UNE modules. (Version 3))

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Flow of Information

<u>External Inputs</u>:
Area, Soil Type,
Company Name
Households,
Businesses,
Distance from Wire Center,
Topography,
Depth to Bedrock

<u>LOGIC</u>:

<u>User Adjustable Inputs</u>:
Prices of cable, NID, fill factors,
plant mix %, structure sharing %,
cost of trenching/backfilling

External Inputs and
User Adjustable Inputs
are combined in the Logic file
to construct
the network and calculate the
required investment
dollars.

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BCPM2.5 Flow of Information Graph

How the LOGIC file works:
User Adjustable Inputs and External Inputs are combined
in a series of If/Then statements and mathematical calculations.

These produce figures (output) on the initial investment required:
Total length of feeder,
total length of distribution,
number of lines on copper,
number of lines on small vs. large digital loop carriers
number of ducts or poles or manholes
investment dollars for buried/underground/aerial
for the specific area.

Next step is to turn investment dollars into monthly costs...

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Flow of Information (cont.)

Cap Cost & Expense Module:

User Adjustable Inputs Set #2:
return on equity, return on debt,
depreciation lives,
state/federal/other taxes
future net salvage percentages

This module produces two key sets of information used to estimate monthly costs: annual charge factors and operating expenses.

Annual Charge Factors:
Applied to the Investment Figures calculated earlier to turn investment into monthly costs.

Operating Expenses:
G&A, General Support, Marketing.
These will become part of monthly costs.

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Flow of Information (cont.)

Annual Charge Factors

Investment Calculations from the LOGIC file

Operating Expenses

REPORTS:

In this module, cost factors are applied to investment dollars. These include depreciation, return and taxes. These are combined with operating expense to get monthly costs. Given monthly costs, universal service support can be calculated for a given benchmark. All available at the wire center level, company level, state level, CBG or GRID level.

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Improvements:

BCPM1 to BCPM2.5

New Data Source for Wire Center Boundaries

- Because costs vary greatly within a single wire center, cost estimation must occur below the wire center level.
- Accurate wire center boundaries are the key to measuring costs accurately.

- BLR boundary information is mapped to individual census blocks allowing for greater detail of analysis.
- Hatfield 4.0 (and BCPM1.1) map only to census block group level. Result is misallocation of customers.

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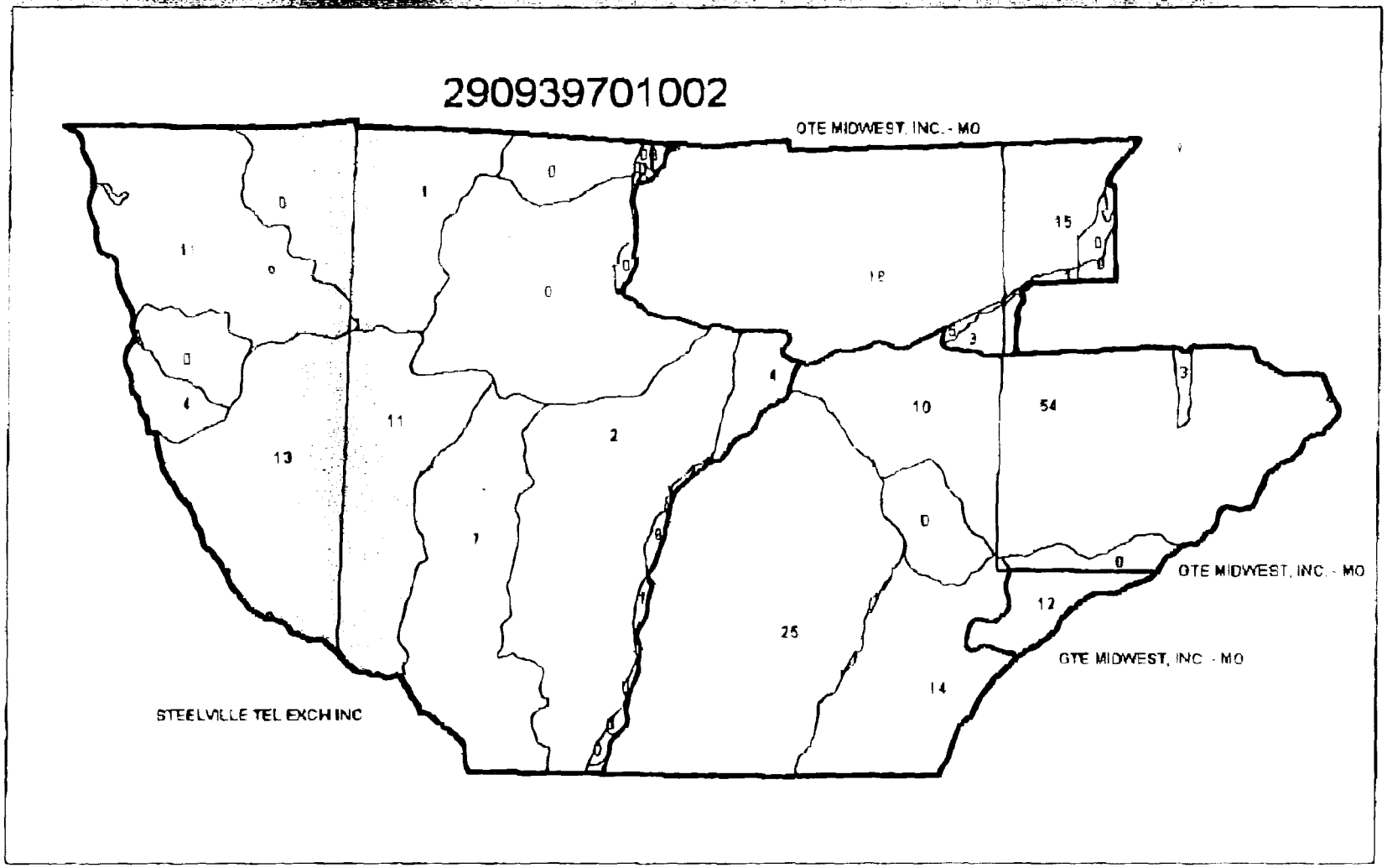
CBG near Steelville Telco, MO



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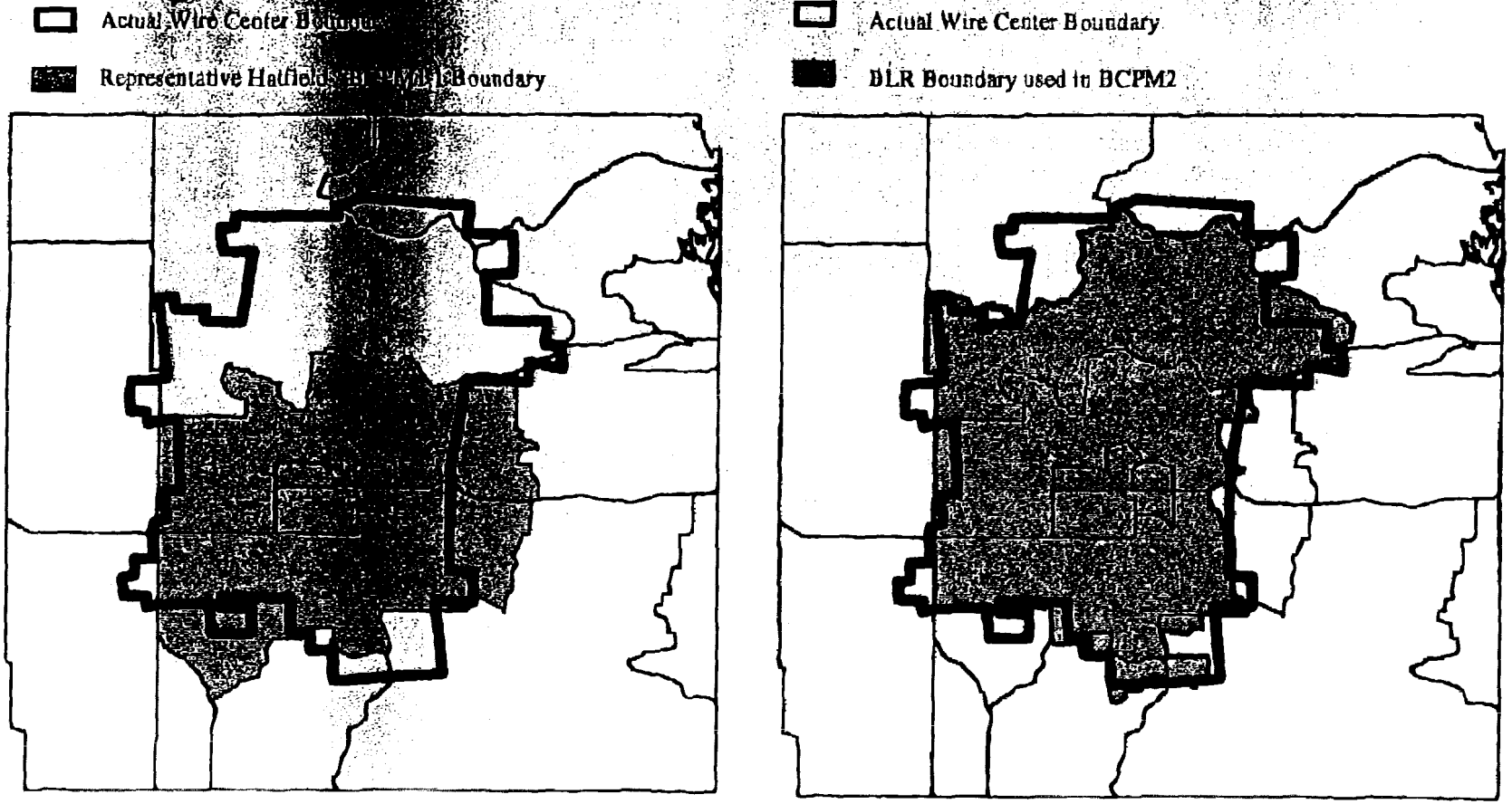
Example:
Wire Center Boundary based on Census Blocks vs. Census Block Groups



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Moving Below the CBG Level:

- Previously, entire CBG was mapped to a certain wire center and costs calculated. CBGs served by 2 or more wire centers were "assigned" only to one.
- Distance/Density key cost drivers. BOTH are distorted by mis-assignment of customers.
- Result: Access line count was inaccurate, required investment was mis-stated, inaccurate costs.
- Solution: New data source allows mapping of individual census blocks to wire centers, allowing validation of access line counts and more accurate cost estimates.

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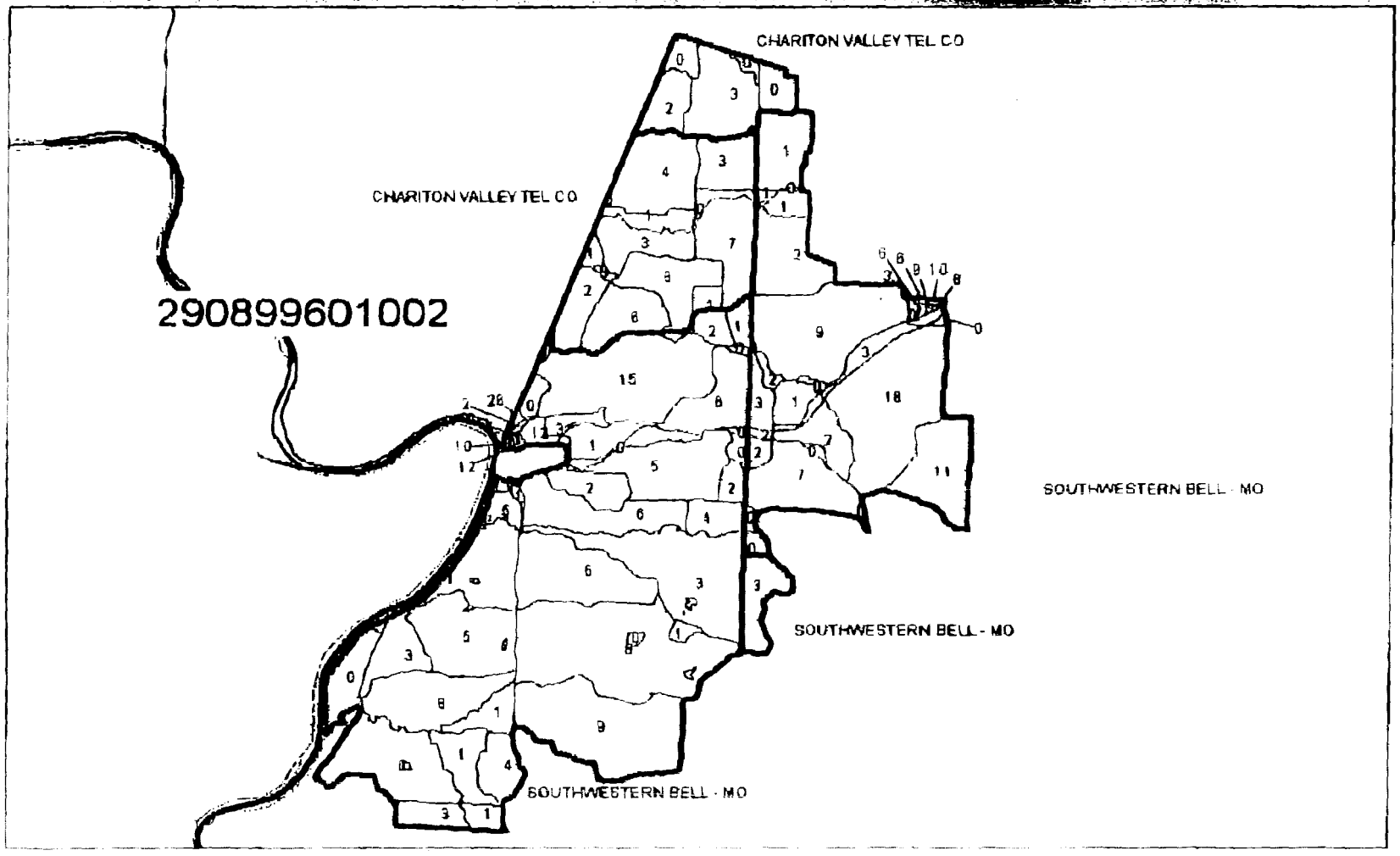
CBG by Chariton Valley Telco, MO



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Enhancements: BCPM1.1 to BCPM2.5 Below the CBG Level in Rural Areas

- Previous Issue: Standard assumption for network construction was customers uniformly distributed throughout CBG. This was inappropriate for rural areas.
- Previous approach: For CBGs with density < 5 HH per sq. mile,
  - -reduce total CBG area to equivalent of 500 ft. "buffer" along roads
  - -assume all customers located within this new area but still uniformly distributed
  - -assume new area is square, build network as before
- Problem: Did not eliminate enough vacant area, no accounting for existing clusters of rural customers.

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Enhancements: BCPM1.1 to BCPM2.5

Below the Rural CBG Level (cont.)

- New Approach: Eliminate CBGs completely. Overlay the Wire Center with Grids (1/25th to 1/200th degree).
- Eliminate areas with no population and no road miles.
- Reduce grid size further to target customer location.
- Assume population is distributed along road miles (validated econometrically)

- Result: New Model builds to clusters of customers where they actually exist.
- Result: New Model eliminates building plant to unpopulated areas.

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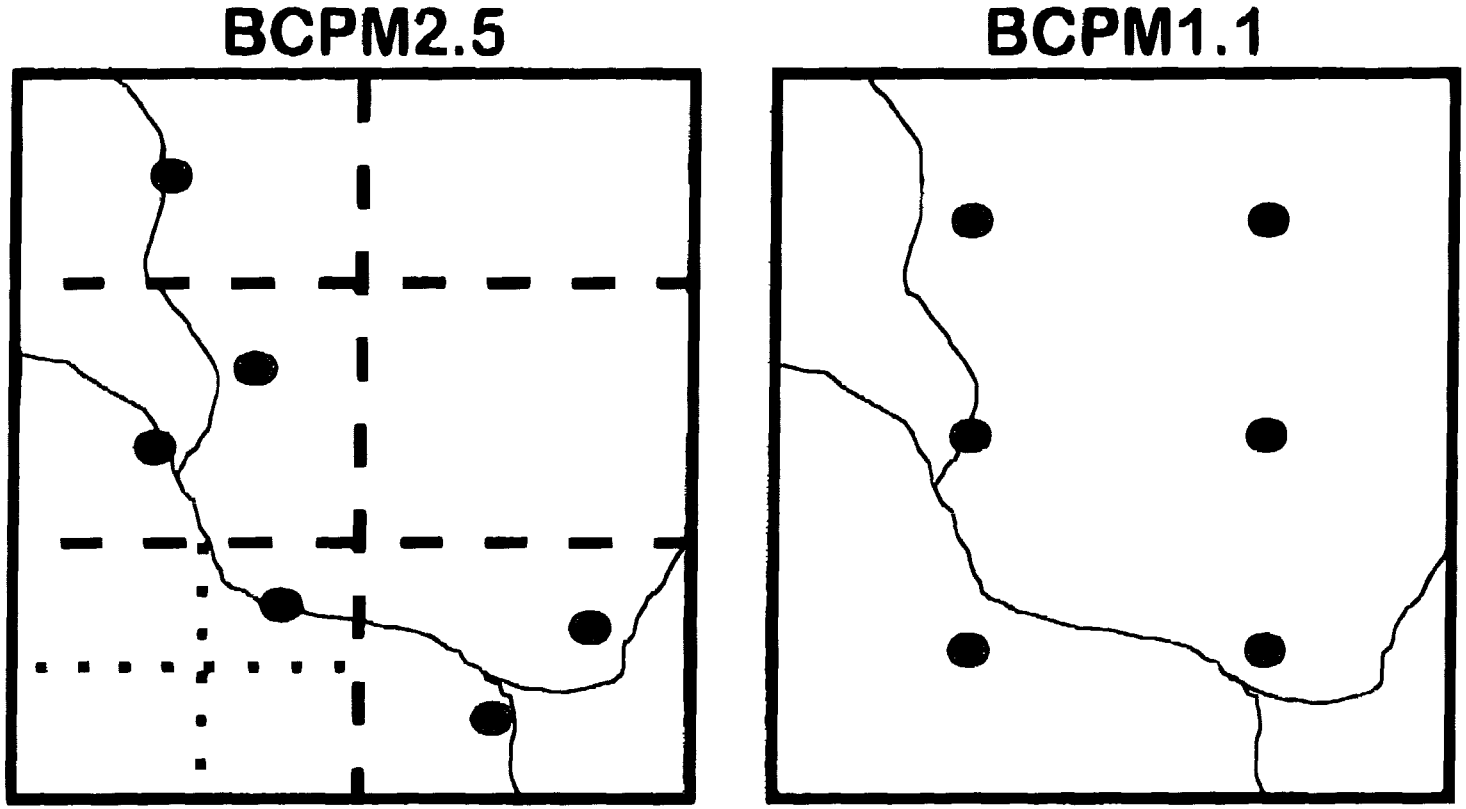

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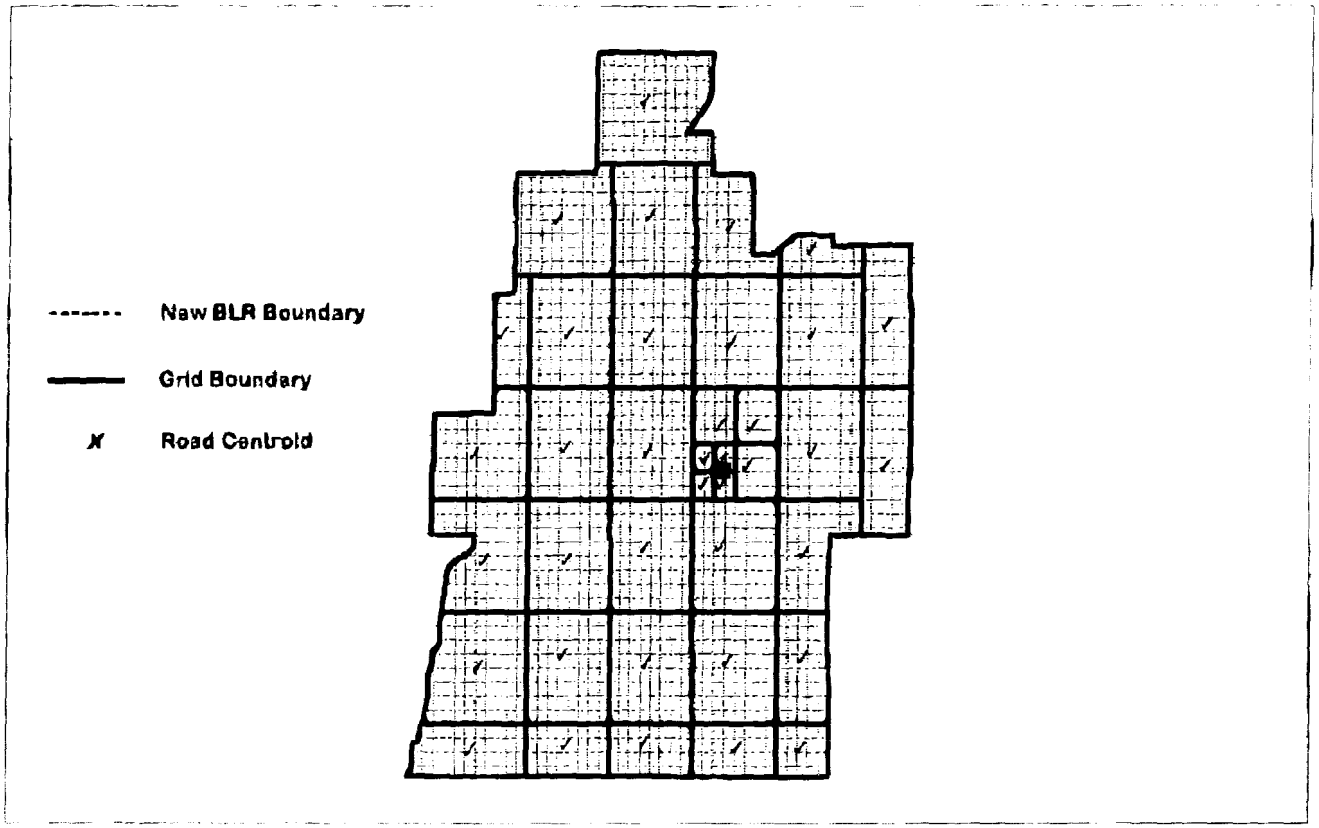
Actual grids used reflect engineering area constraints.

- Various sized grids applied to actual wire center. Road centroid will partition each grid into quadrants.



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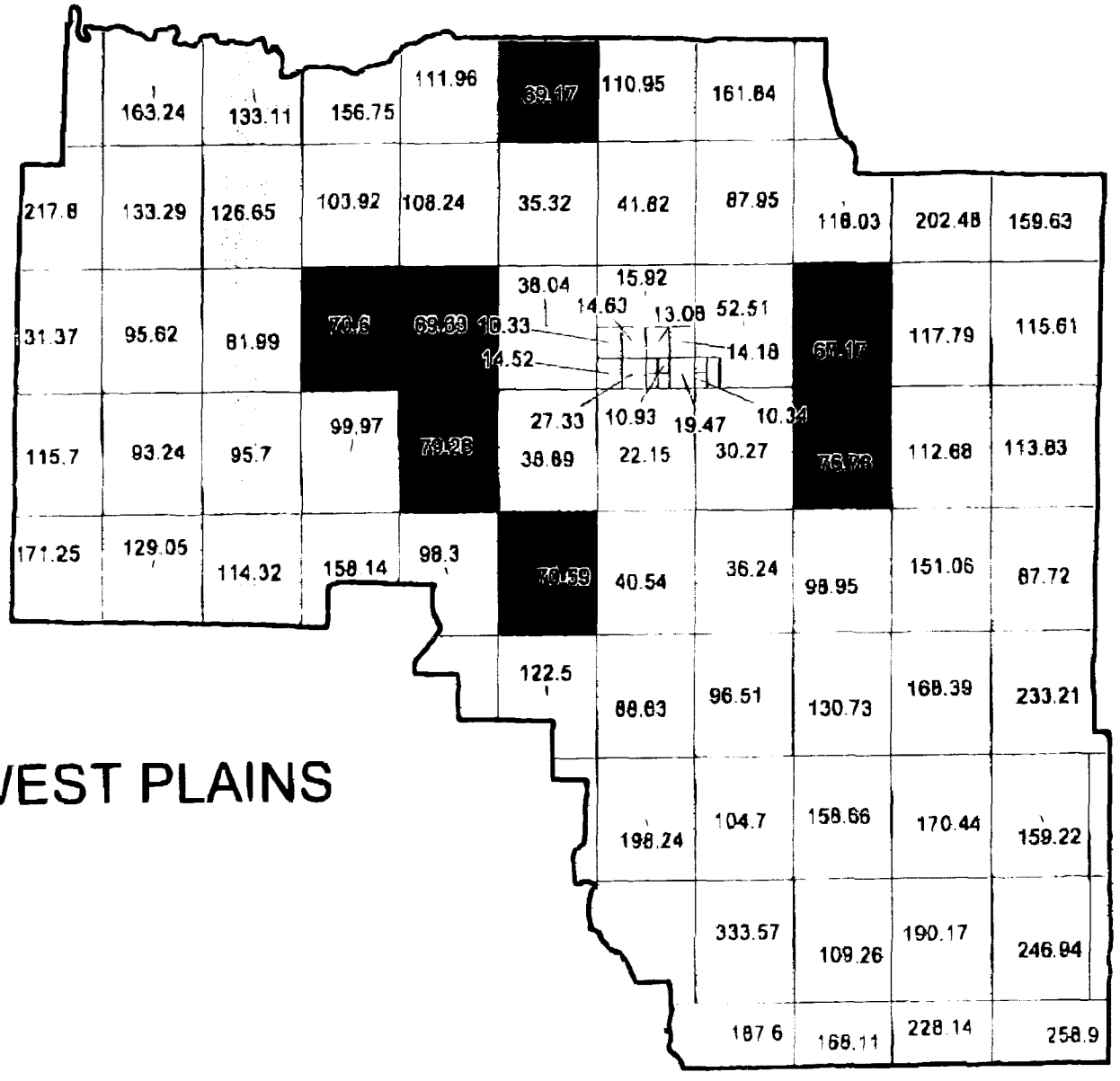
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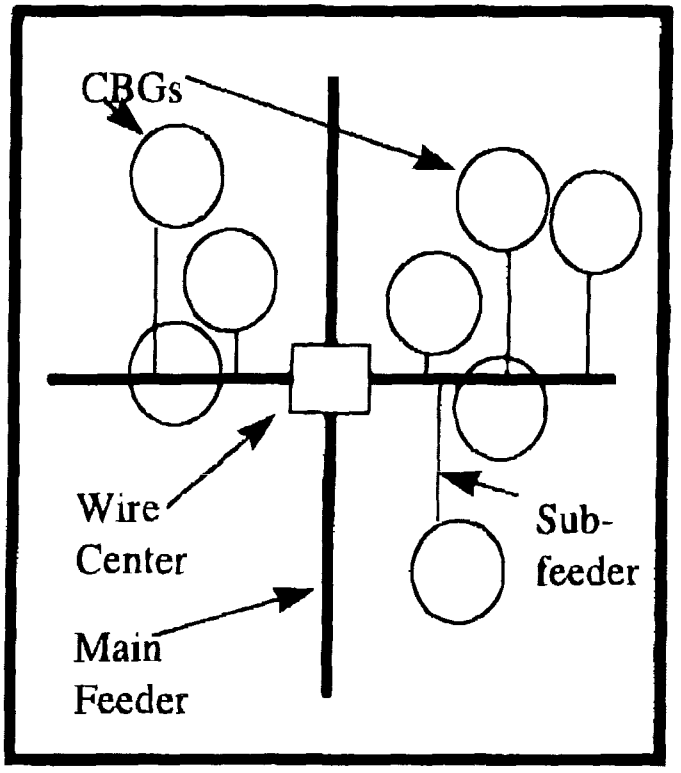
WEST PLAINS

BCPM2.5

BCPM1.1



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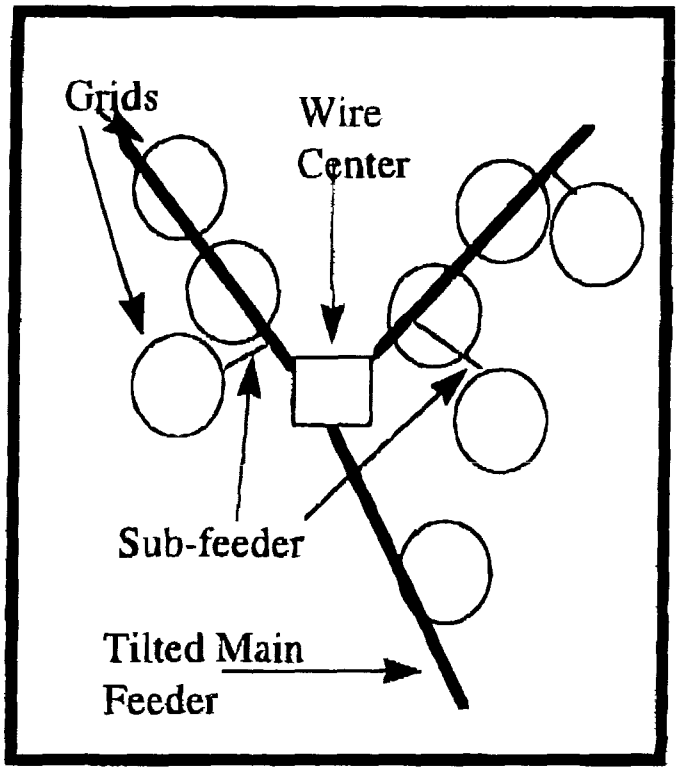

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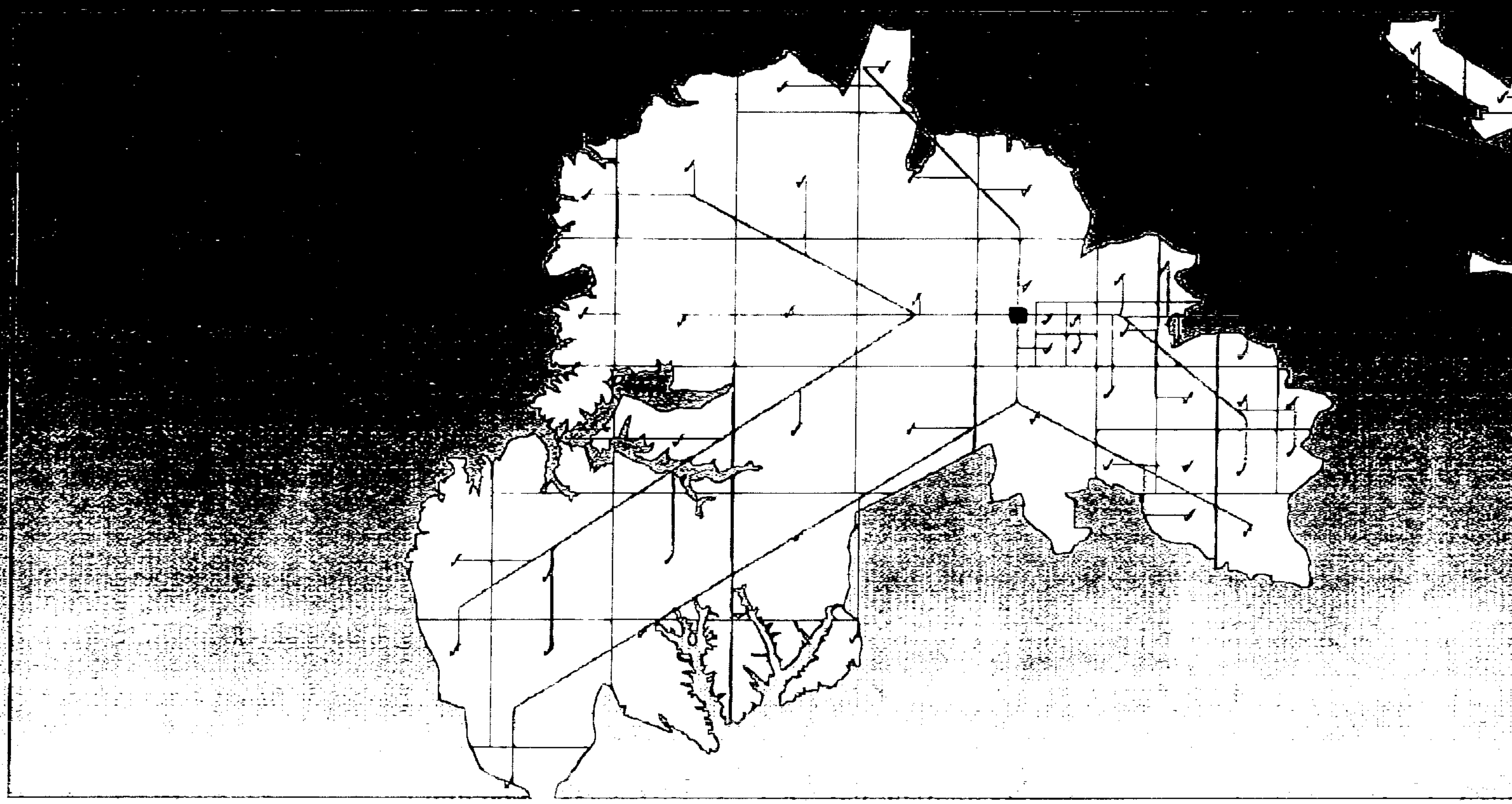
Example of New Feeder Engineering

Tilting main feeder (creating a Y effect) in order to target feeder to actual customer locations within the wire center.



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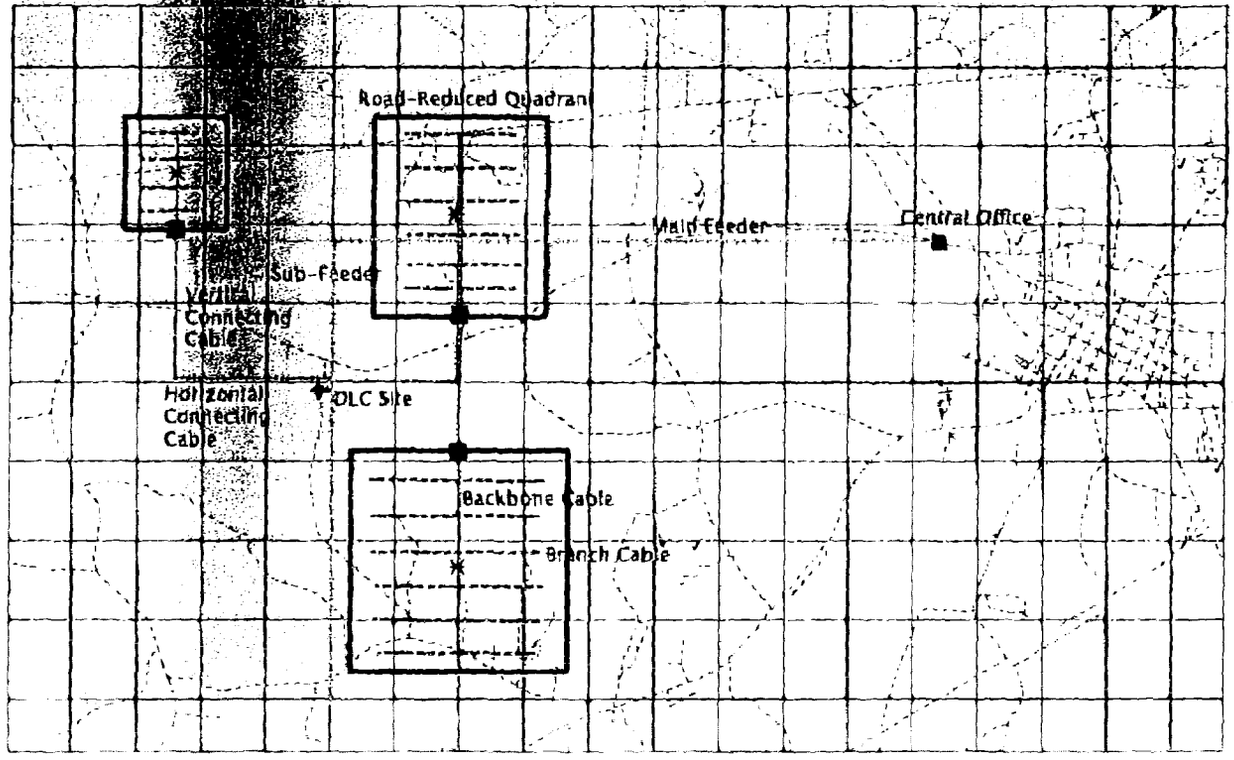
New Distribution Engineering

Individual grid becomes new engineering area. Road centroid of grid is used to create quadrants, the area of quadrant is reduced to reflect road miles, and distribution built within this reduced area.



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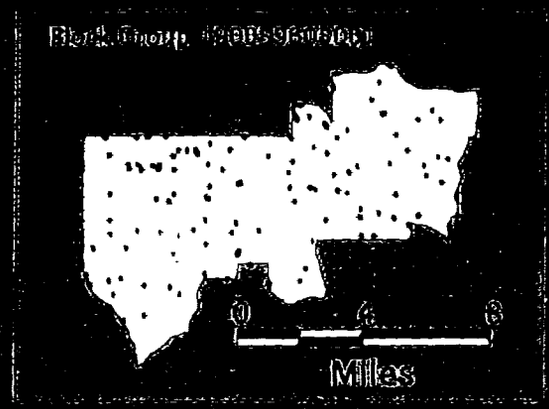
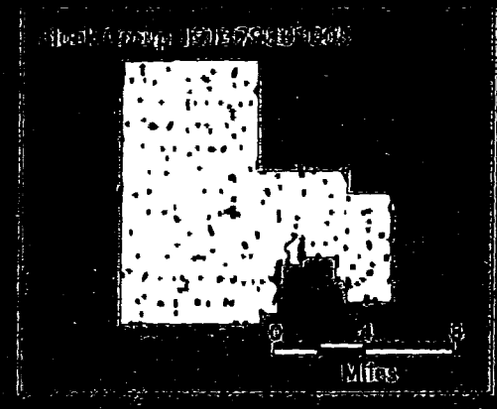
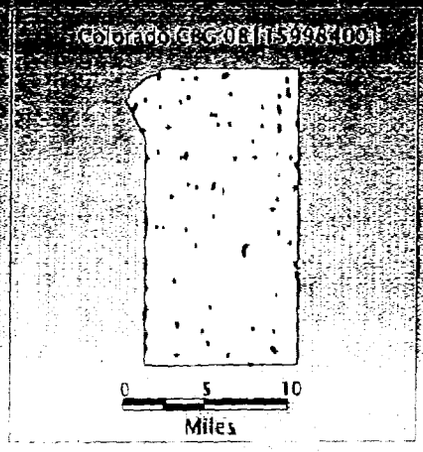
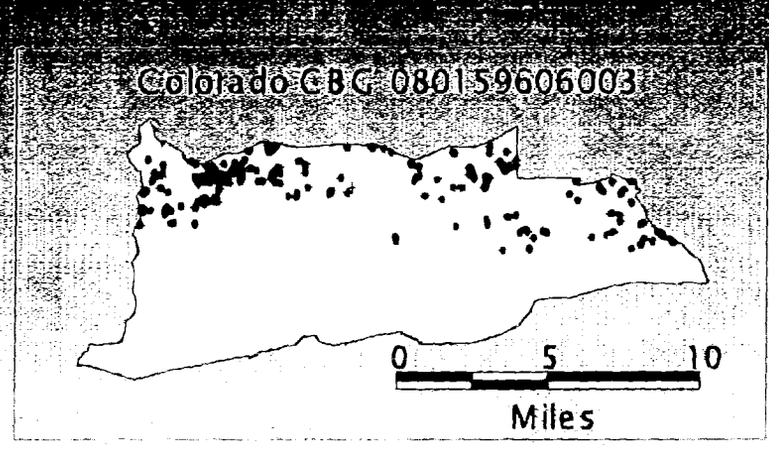
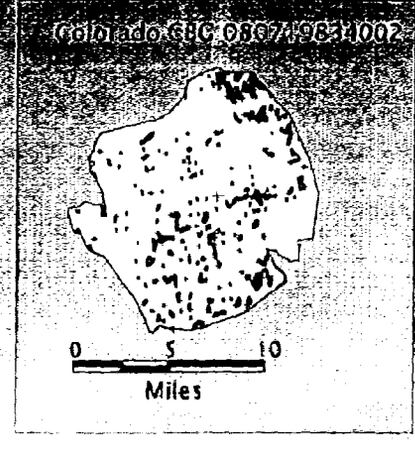
Examples of Customer Location from Satellite Maps











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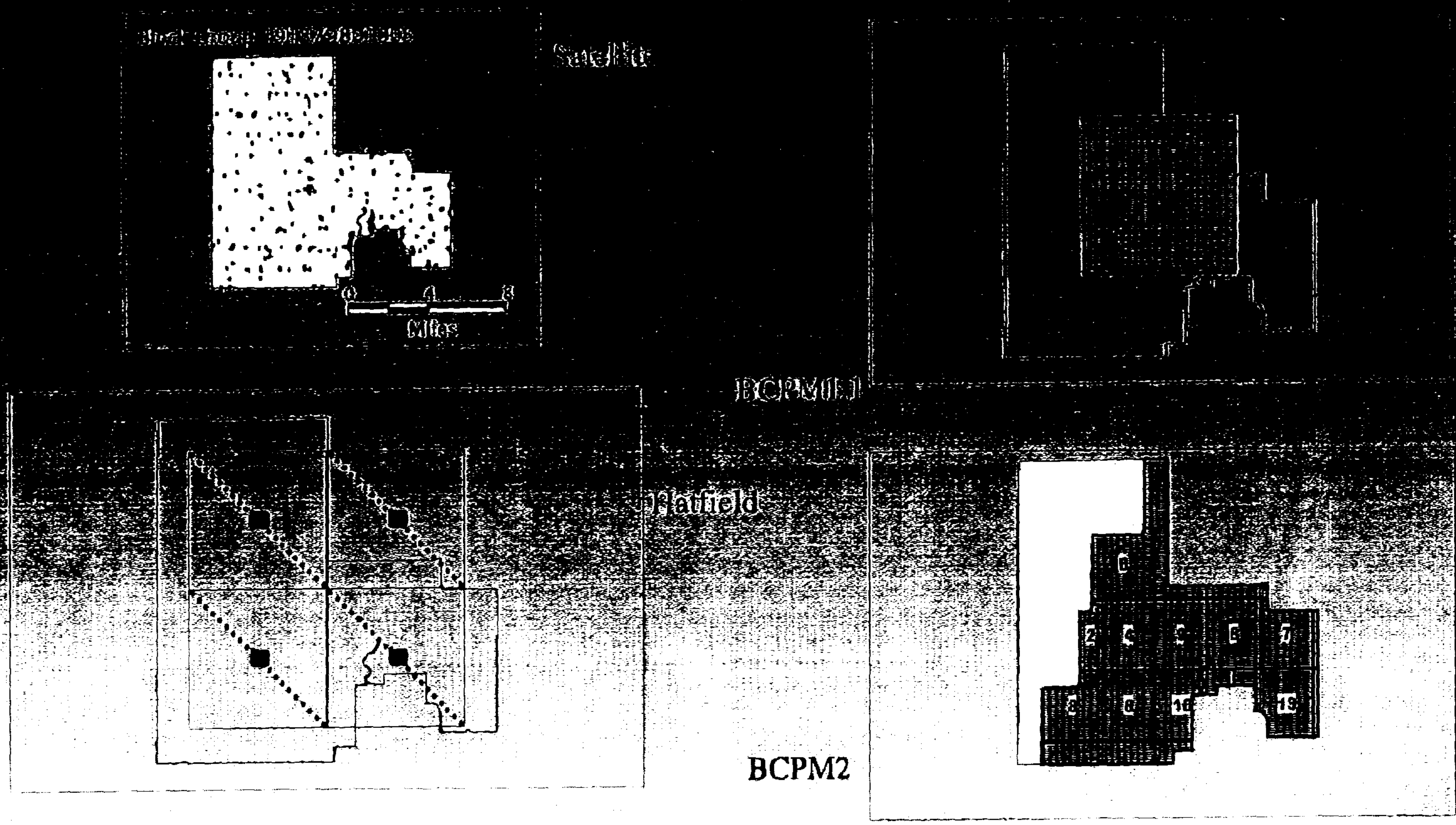
Examples of Customer Location Mapping by Models



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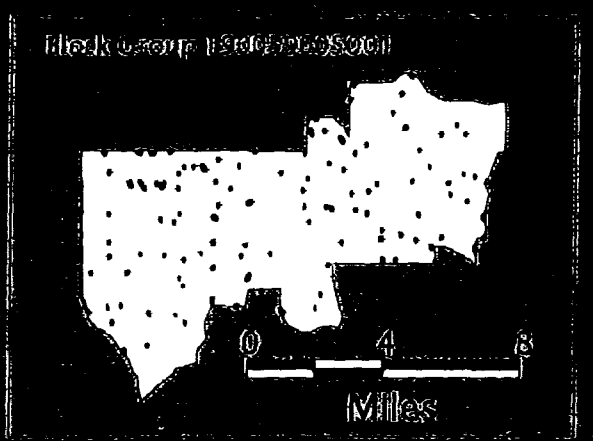
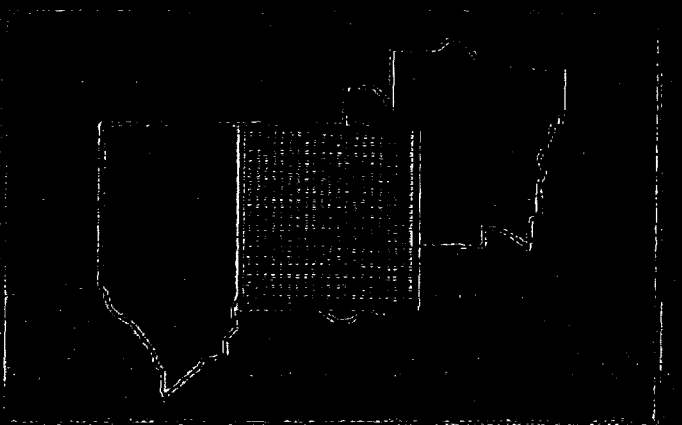
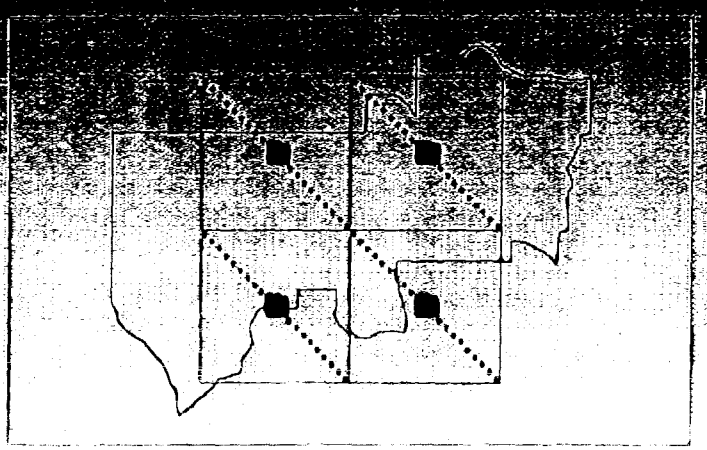
Examples of Customer Location Mapping by Models

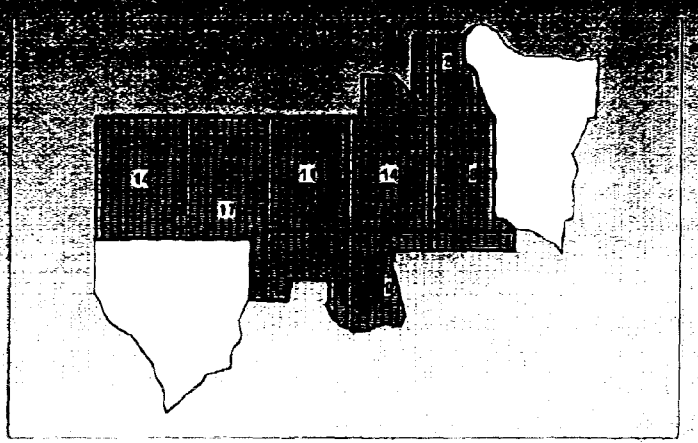






Hatfield

BCPM2



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BCPM2.5

Enhancements:
BCPM to BCPM2.5
Expense Module Changes

- Previously, all expenses calculated on per-line basis.
- Issue: This approach can distort by either....
  - applying too much plant-related expense in dense areas, or
  - applying expenses where they are actually not incurred (e.g. aerial metallic expense)
- Solution: Allow user to determine when expenses are applied "per investment category", "per line", or combination of both.
- Average Costs unaffected, cost distribution changes.

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